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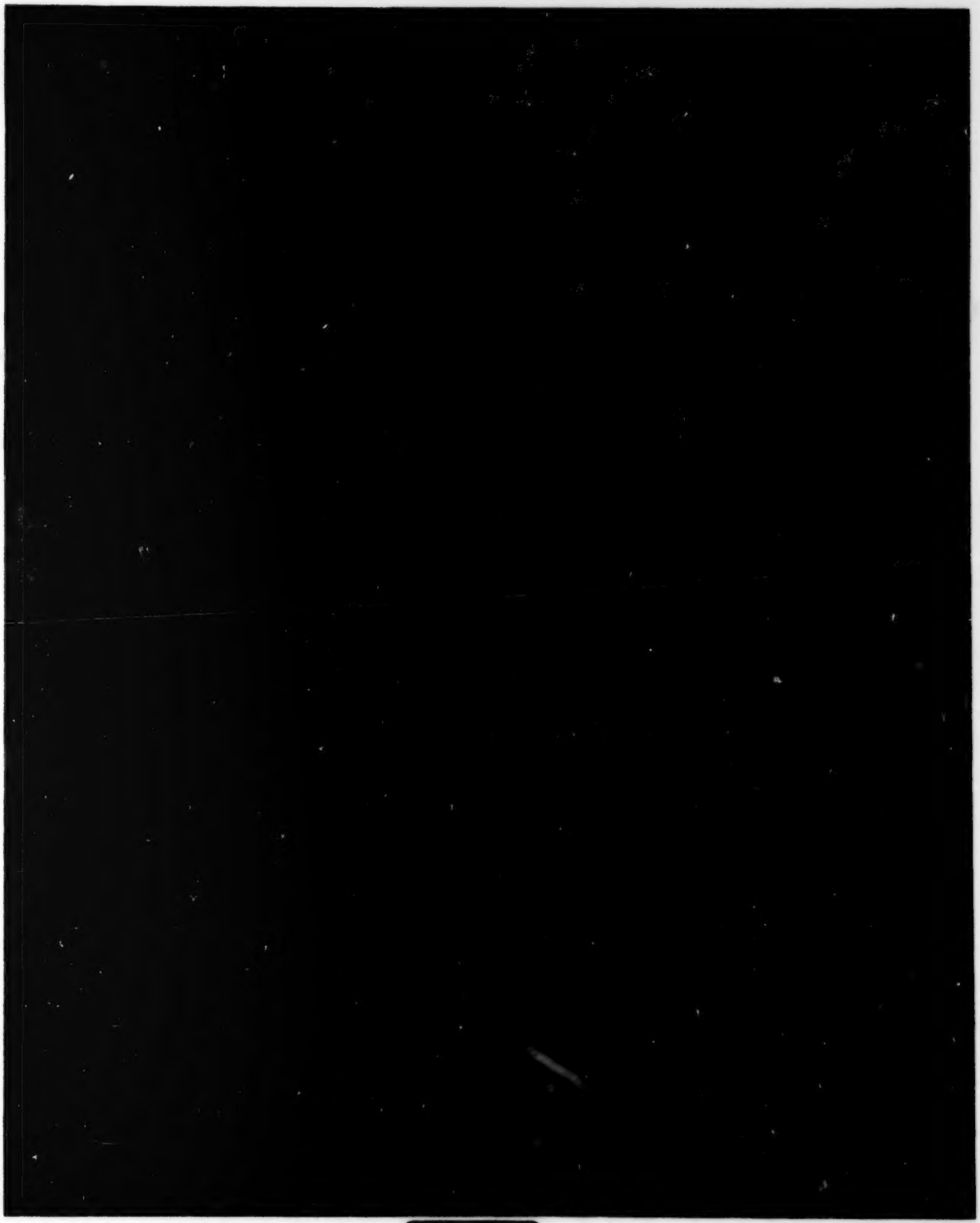
CROWN LANDS HARVESTING SYSTEM SURVEY 1983-84



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FOREST UTILIZATION BRANCH
DEPARTMENT OF NATURAL RESOURCES
NEW BRUNSWICK

Minister: Hon. Richard B. Hatfield

CROWN LANDS HARVESTING SYSTEM SURVEY 1983-84

Department of Natural Resources

New Brunswick

Copies available by contacting:

Forest Utilization Branch,
Department of Natural Resources,
P. O. Box 6000, Fredericton, N. B.
E3B 5H1

Authors: S. G. Henley
and
M. H. McDonald

Cover: Tim Fevens

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ABSTRACT

The Crown Lands Harvesting System Survey was initiated during 1980 by the Forest Utilization Branch of the Department of Natural Resources (DNR) as a means of gaining background information about harvesting on which guidelines and policy pertaining to harvesting and utilization could be based.

The 1983-84 Survey gives an indication of the harvesting systems and machine types used and approximate volumes of wood harvested by these systems for the Licensees and Sub-licensees entitled to operate on Crown Lands.

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INTRODUCTION

The Crown Lands Harvesting System Survey was initiated during 1980 by the Forest Utilization Branch of the Department of Natural Resources. The 1983-84 Survey report gives an indication of the harvesting systems and machine types used and approximate volumes of wood harvested by these systems for the Licensees and Sub-licensees entitled to operate on Crown Lands.

Information in this report is of a general nature and results given for an individual License may vary slightly from the actual because of changes since the survey and the interpretation of the information received. This report gives no indication of harvesting patterns and trends on a Province-wide basis; however, it should give a good indication of what is happening on Crown Lands.

The 1983-84 Survey was conducted on a License basis as opposed to a Region basis for previous surveys, and comparison of volume figures with previous survey figures will be difficult.

The survey was based on actual volumes reported to the Department of Natural Resources as of March 31, 1984, and on volume percentages and harvesting systems reported in Operating Plans and/or Annual Reports submitted by the Licensees.

PURPOSE

The purpose of the Crown Lands Harvesting System Survey is:

(1) To gain background information, on which decisions concerning guidelines and policy pertaining to harvesting and utilization can be based.

(2) To identify any trends or changes in the harvesting of wood from Crown Lands.

(3) To familiarize DNR staff with the various harvesting systems and machine types being used to harvest wood from Crown Lands.

PROCEDURE

The Crown Lands Harvesting System Survey was carried out by the following procedure:

(1) The harvesting system used by each of the ten Licensees and by their Sub-licensees was obtained from the 1983-84 Licensees' Operating Plans and/or Annual Reports.

(2) Volumes obtained from scale reports received to March 31 of the 1983-84 operating season were coupled with information obtained on harvesting systems to determine an approximate amount of wood harvested by each system.

(3) Harvesting systems and machine types used by the Licensees and the Sub-licensees were listed by License.

(4) Approximate volumes of wood harvested by each system were tabulated for the Province and for each individual License (separate by Licensee and Sub-licensee).

(5) Harvesting functions on a Provincial basis were displayed in bar charts.

RESULTS

HARVESTING SYSTEMS AND MACHINE TYPES

The harvesting systems and machine types (excluding cable skidders and forwarders) employed by various Licensees and Sub-licensees operating on Crown Lands are listed below by License.

	% of Scale Volume	
	SW	HW
Upsalquitch License		
Licensee (NBIP Limited)		
- Koehring Shortwood Harvesters (company)	26	2
- Tree length skidder with mechanical roadside slashing (company)	54	76
- Tree length skidder with manual roadside slashing (contractor)	20	22
Sub-licensees		
- Tree length skidder with manual roadside slashing		
Burchill Plywood Ltd.	100	-
J.S. Murray & Sons Ltd.	100	-
Cedre Restigouche Ltée.	100	28
- Tree length skidder with mechanical roadside slashing		
Cedre Restigouche Ltée	-	72
Oscar Belanger Lumber Co. Ltd.	100	100
Adrien Arseneault	100	-

Equipment

- 12 Koehring Shortwood Harvesters
- 7 Hood type slashers (one man)

	% of Scale Volume	
	SW	HW
Nepisiguit License		
Licensee (CONSOLIDATED-BATHURST INC.)		
- Tree length skidder with mechanical roadside slashing (company)	60	49
- Trail cut/porter (company)	10	1
- Tree length skidder with mechanical roadside slashing (contractor)	12	23
- Trail cut/porter (contractor)	18	27
Sub-licensees		
- Tree length skidder with mechanical roadside slashing		
Chaleur Pulpwood Ltd.	78	79
North American Forest Products Ltd.	100	100
La Scierie Nigadoo Sawmills Ltée.	20	21
- Tree length skidder with manual roadside slashing		
Herbert Knowles Enterprises Ltd.	19	14
- Trail cut/porter		
Chaleur Pulpwood Ltd.	22	21
La Scierie Claude Comeau	100	100
Jean-Paul Duclos et Fils Ltée.	100	100
Herbert Knowles Enterprises Ltd.	81	86
Moulin McGraw Sawmills Ltd.	100	100
Saumarez Lumber (1971) Ltd.	100	100
La Scierie Nigadoo Sawmills Ltée.	80	79

Equipment

- 1 Tanguay C100 slasher (one man)
- 5 Hood slashers (one man)

	% of Scale Volume	
	SW	HW
Lower Miramichi License		
Licensee (Acadia Forest Products Limited)		
- Tree length skidder with manual roadside slashing (company)	5	54
- Tree length skidder with mechanical roadside slashing (company)	4	3
- Full tree skidder with mechanical roadside delimbing and slashing (company)	15	7
- Trail cut/porter (company)	5	1
- Trail cut/porter (contractor)	32	15
- Tree length skidder with manual roadside slashing (contractor)	8	11
- Tree length skidder with mechanical roadside slashing (contractor)	20	7
- Full tree skidder with mechanical roadside delimbing and slashing (contractor)	11	2
Sub-licensees		
- Horse		
Russell and Swim Ltd.	100	100
Glen Gilks	100	-

Equipment

- 1 Tanguay C100 slasher (one man)
- 2 Hood slashers (one man)
- 1 Harricana delimber, International tracked carrier

	% of Scale Volume	
	SW	HW
Upper Miramichi License		
Licensee (Boise Cascade Canada Ltd.)		
- Koehring Feller Forwarders with mechanical roadside delimbing and slashing (company)	17	22
- Trail cut/porter (contractor)	72	48
- Tree length skidder with mechanical roadside slashing (contractor)	9	9
- Tree length skidder with manual roadside slashing (contractor)	2	11
- Manual fell, full tree chipping in bush (company, experimental)	-	10
Sub-licensees		
- Trail cut/porter		
I.T.T. Industries of Canada Ltd.	90	-
Tobique Lumber Co. Ltd.	100	100
Veneer Products of N.B. Ltd.	100	100
Ralph F. Sadler	-	100
- Tree length skidder with manual roadside slashing		
Glen Gilks	100	-
- Tree length skidder with mechanical roadside slashing		
I.T.T. Industries of Canada Ltd.	10	-

Equipment

- 2 Koehring Feller Forwarders
- 3 Hood slashers (one man)
- 1 TSL Sawbuck slasher (one man)
- 1 Bruks chipper mounted on Kockums forwarder
- 1 JCD delimber with Rogers head
- 2 Drott carriers with Denis delimbing heads

	% of Scale Volume	
	SW	HW
Kent License		
Licensee (Northwood Pulp and Timber Limited)		
- Trail cut/porter (contractor)	96	91
- Tree length skidder with manual roadside slashing (contractor)	1	0
- Horse (contractor)	3	9
Sub-licensees		
- Trail cut/porter		
Roy	100	100
Thebeau	100	100
Queens-Charlotte License		
Licensee (J. D. Irving Limited) (company operations)		
- Full tree skidder with mechanical roadside delimbing and slashing	65	14
- Full tree skidder with mechanical roadside delimbing and mill slashing	20	-
- Tree length skidder with mechanical roadside slashing	3	71
- Kockums feller buncher/processor	4	4
- Trail cut/porter	6	11
- Tree length skidder with manual slashing roadside	-	-
- Tree length skidder with mechanical mill slashing	2	-
Sub-licensees		
- Trail cut/porter		
Russell and Swim	53	69
McLeod and Lamb	100	100
St. Anthony Lathing	100	100

	% of Scale Volume SW	HW
- Tree length skidder with mechanical roadside slashing		
Dead River Ltd.	-	100
- Tree length skidder with manual roadside slashing		
Russell and Swim Ltd.	25	28
- Horse/tractor		
Russell and Swim Ltd.	22	3

Equipment

- 3 John Deere 693B feller bunchers (shear heads)
- 2 Kockums 880 feller bunchers (saw heads)
- 2 Cat 518 grapple skidders
- 2 Timberjack 380 grapple skidders
- 1 Timberjack 550 grapple skidders
- 5 Denis delimbers (Drott 40, Koehring, Case carriers),
- 2 Harricana delimbers (Cat 215 carriers)
- 4 Tanguay C100 slashers (one man)
- 3 Hood slashers (one man)

Fundy License

Licensee (Rothesay Paper Limited)

- did not harvest on Crown Lands during 1983-84 operating season.

Sub-licensees

- Trail cut/porter		
J. D. Irving Ltd.	53	71
Dead River Ltd.	62	52
Gerald M. Price Ltd.	75	9
St. Paul Lumber Ltd.	100	100
Lakeburn Lumber Ltd.	86	6
T.P. Downey & Sons Ltd.	1	-

	% of Scale Volume	
	SW	HW
Fawcett Enterprises Limited	100	100
Gerald A. Roy Ltd.	100	100
Devon Lumber Co. Ltd.	46	33
- Tree length skidder with mechanical roadside slashing		
Dead River Ltd.	2	13
Lakeburn Lumber Ltd.	14	94
T.P. Downey & Sons Ltd.	49	99
J.D. Irving Limited.	1	12
Devon Lumber Co. Ltd.	-	49
- Tree length skidder with manual roadside slashing		
T.P. Downey	1	1
Terry Gallant	-	100
Dead River Ltd.	6	7
Gerald M. Price Ltd.	25	91
J.D. Irving Limited	1	-
Devon Lumber Co. Ltd.	13	12
- Full tree skidder with mechanical roadside delimbing and slashing		
T.P. Downey & Sons Ltd.	49	-
J.D. Irving Limited	21	8
Devon Lumber Co. Ltd.	41	6
- Full tree skidder with mechanical roadside delimbing and mill slashing		
J.D. Irving Limited	12	-
- Full tree skidder and full tree roadside chipping		
Dead River Ltd.	-	4
- Mechanical fell, delimb, and slash with feller-slasher heads and forward with porters		
Dead River Ltd.	30	24
J.D. Irving Limited	12	9

	% of Scale Volume	
	SW	HW

Equipment

- 3 Kockums carriers with Timmins feller-slasher heads
- delimbers and slashers - contracted from Queens-Charlotte license
- 1 22" Precision full tree chipper

York License

Licensee (St. Anne-Nackawic Pulp & Paper Company, Ltd.)

- Trail cut/porter (contractor)	5	6
- Tree length skidder with mechanical roadside slashing (company)	33	27
- Tree length skidder with mechanical roadside slashing (contractor)	35	23
- Tree length skidder with manual roadside slashing (contractor)	27	44

Sub-licensees

- Sub-licensees did not harvest on Crown Land during 1983-84 operating season.

Equipment

- 2 Hood slashers (one man)
- 2 Tanguay C100 slashers (one man)
- 2 homemade slashers (one man)

	% of Scale Volume	
	SW	HW
Carleton License		
Licensee (Juniper Lumber Co. Ltd.)		
- Tree length skidder with mechanical mill slashing (company)	100	100
- Tree length skidder with manual roadside slashing (contractor)	-	100
Sub-licensees		
- Tree length skidder with mechanical mill slashing		
Crabbe	84	91
St. Anne-Nackawic	100	100
- Tree length skidder with manual roadside slashing		
Tompkins	100	100
Crabbe	16	9
Equipment		
- 2 Hood slashers (one man)		
Restigouche-Tobique License		
Licensee (Fraser Inc.)		
- Koehring Feller Forwarder with mechanical roadside delimbing and slashing (company)	10	13
- Full tree Ecologger with mechanical roadside delimbing and mill slashing (company)	6	2
- Tree length skidder with mechanical roadside slashing (company)	60	22
- Tree length skidder with manual roadside slashing (company)	2	-

	% of Scale Volume	
	SW	HW
- Tree length skidder with mechanical mill slashing (company)	22	8
- Full tree skidder with manual roadside slashing (logs) and partial tree chipping (experimental biomass study) (company)	-	55
Sub-licensees		
- Tree length skidder with manual roadside slashing		
Gilles Begin Lumber Ltée.	100	100
Raoul Couturier Lumber Ltd.	94	86
Kedgwick Lumber Ltd.	68	100
Cedre Restigouche Ltée.	68	43
Ralph F. Sadler	100	100
- Tree length skidder with mechanical roadside slashing		
Raoul Couturier Lumber Ltd.	6	14
North American Forest Products Ltd.	100	100
Cedre Restigouche Ltée.	32	57
- Tree length skidder with mechanical slashing at the mill		
Kedgwick Lumber Ltd.	32	-

Equipment

- 1 Koehring Feller Forwarder
- 1 Logma delimber
- 3 Tanguay 5100 slashers (three man)
- 3 Tanguay C100 slashers (one man)
- 2 Harricana delimbers (CAT 215 carriers)
- 1 Ecologger
- 1 Hood slasher (one man)
- Morbark 22" chipper
- 1 Morbell logger

AMOUNTS OF WOOD HARVESTED

Approximate amounts and percentages of wood harvested by each system can be obtdained by referring to the following tables.

Table 1. Harvesting Systems - Province by volume and percent

Table 2. Harvesting Systems - Licenses by volume and percent

Table 3. Harvesting Systems - Upsalquitch License by volume and percent

Table 4. Harvesting Systems - Nepisiguit License by volume and percent

Table 5. Harvesting Systems - Lower Miramichi License by volume and percent

Table 6. Harvesting Systems - Upper Miramichi License by volume and percent

Table 7. Harvesting Systems - Kent License by volume and percent

Table 8. Harvesting Systems - Queens-Charlotte License by volume and percent

Table 9. Harvesting Systems - Fundy License by volume and percent

Table 10. Harvesting Systems - York License by volume and percent

Table 11. Harvesting Systems - Carleton License by volume and percent

Table 12. Harvesting Systems - Restigouche-Tobique License by volume and percent

Table 1. Harvesting Systems - Province by volume and percent

FUNCTION	PROVINCE 1981-82				PROVINCE 1982-83				PROVINCE 1983-84			
	SW m^3	%	HW m^3	%	SW m^3	%	HW m^3	%	SW m^3	%	HW m^3	%
Manual Fell	3 355 030	(83)	731 235	(95)	1 718 492	(91)	239 174	(96)	2 820 520	(91)	384 144	(96)
Mechanical Fell	686 125	(17)	34 850	(5)	159 848	(9)	9 676	(4)	265 859	(9)	17 054	(4)
Manual Delimb (bush)	2 837 710	(70)	700 865	(91)	1 301 396	(69)	197 861	(80)	2 167 960	(70)	349 009	(87)
Mech. Delimb (bush)	325 560	(8)	8 140	(1)	84 195	(5)	3 149	(1)	150 770	(5)	9 185	(2)
Mech. Delimb (road)	877 885	(22)	36 920	(5)	492 749	(26)	47 840	(19)	767 649	(25)	25 651	(7)
Manual Delimb (road)	-	-	-	-	-	-	-	-	-	-	-	-
Forward Short Wood	1 338 600	(33)	243 200	(32)	527 988	(28)	46 760	(19)	1 009 268	(33)	76 414	(19)
Forward Tree Length	1 824 670	(45)	472 115	(62)	857 603	(46)	154 250	(62)	1 309 462	(42)	281 780	(70)
Forward Full Tree	877 885	(22)	50 770	(6)	492 749	(26)	47 840	(19)	767 649	(25)	43 004	(11)
Manual Slash (bush)	1 013 040	(25)	236 740	(31)	443 793	(24)	43 611	(17)	874 211	(28)	64 202	(16)
Manual Slash (road)	762 585	(19)	291 955	(38)	439 032	(23)	125 392	(51)	223 203	(7)	71 436	(18)
Mech. Slash (bush)	325 560	(8)	8 140	(1)	84 195	(5)	3 149	(1)	152 551	(5)	6 446	(2)
Mech. Slash (road)	1 241 125	(31)	162 180	(21)	675 854	(36)	56 849	(23)	1 492 987	(48)	189 020	(47)
Mech. Slash (mill)	698 845	(17)	-	-	235 466	(12)	19 849	(8)	343 427	(12)	52 671	(13)
Manual Slash (mill)	-	-	46 900	(6)	-	-	-	-	-	-	-	-
Full Tree Chip	-	-	20 160	(-3)	-	-	-	-	-	-	17 353	(4)
TOTAL	4 041 155	(100)	766 085	(100)	1 878 340	(100)	248 850	(100)	3 086 379	(100)	401 198	(100)

1) Volume figures were obtained from scale reports received to March 31, 1984.
2) Distribution of volumes by harvesting system were estimates based on information obtained in the 1983-84 Operating Plans and/or Annual Reports for Crown Lands.

Table 2. Harvesting Systems - Licenses by volume and percent

FUNCTION	UPSALQUITCH				NEPISIGUIT				LOWER MIRAMICHI			
	SW m^3	%	HW m^3	%	SW m^3	%	HW m^3	%	SW m^3	%	HW m^3	%
Manual Fell	249 558	(74)	21 317	(98)	227 028	(100)	44 950	(100)	278 656	(100)	6 967	(100)
Mechanical Fell	89 690	(26)	465	(2)	-	-	-	-	-	-	-	-
Manual Delimb (bush)	249 558	(74)	21 317	(98)	227 028	(100)	44 950	(100)	210 954	(76)	6 434	(92)
Mech. Delimb (bush)	89 690	(26)	465	(2)	-	-	-	-	-	-	-	-
Mech. Delimb (road)	-	-	-	-	-	-	-	-	67 702	(24)	533	(8)
Manual Delimb (road)	-	-	-	-	-	-	-	-	-	-	-	-
Forward Short Wood	89 690	(26)	465	(2)	81 817	(36)	17 182	(38)	98 031	(36)	1 096	(15)
Forward Tree Length	249 558	(74)	21 317	(98)	145 211	(64)	27 768	(62)	112 923	(40)	5 338	(77)
Forward Full Tree	-	-	-	-	-	-	-	-	67 702	(24)	533	(8)
Manual Slash (bush)	-	-	-	-	88 341	(39)	13 454	(30)	98 031	(36)	1 096	(15)
Manual Slash (road)	67 253	(20)	4 762	(22)	2 126	(1)	304	(1)	48 316	(17)	4 658	(67)
Mech. Slash (bush)	89 690	(26)	465	(2)	-	-	-	-	-	-	-	-
Mech. Slash (road)	182 305	(54)	16 555	(76)	136 561	(60)	31 192	(69)	132 309	(47)	1 213	(18)
Mech. Slash (mill)	-	-	-	-	-	-	-	-	-	-	-	-
Manual Slash (mill)	-	-	-	-	-	-	-	-	-	-	-	-
Full Tree Chip	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL	339 248	(100)	21 782	(100)	227 028	(100)	44 950	(100)	278 656	(100)	6 967	(100)

1) Volume figures were obtained from scale reports received to March 31, 1984.
2) Distribution of volumes by harvesting system were estimates based on information obtained in the 1983-84 Operating Plans and/or Annual Reports for Crown Lands.

Table 2. Harvesting Systems - Licenses by volume and percent

FUNCTION	UPPER MIRAMICHI				KENT				QUEENS-CHARLOTTE			
	SW m^3	%	HW m^3	%	SW m^3	%	HW m^3	%	SW m^3	%	HW m^3	%
Manual Fell	459 699	(86)	12 968	(83)	36 784	(100)	1 005	(100)	613 030	(96)	65 039	(95)
Mechanical Fell	76 701	(14)	2 667	(17)	-	-	-	-	25 543	(4)	3 423	(5)
Manual Delimb (bush)	459 699	(86)	11 746	(75)	36 784	(100)	1 005	(100)	114 943	(18)	53 400	(78)
Mech. Delimb (bush)	-	-	-	-	-	-	-	-	19 157	(3)	2 739	(4)
Mech. Delimb (road)	76 701	(14)	2 667	(17)	-	-	-	-	504 473	(79)	12 323	(18)
Manual Delimb (road)	-	-	-	-	-	-	-	-	-	-	-	-
Forward Short Wood	402 310	(75)	9 360	(60)	35 344	(96)	919	(91)	83 014	(13)	9 585	(14)
Forward Tree Length	57 389	(11)	2 386	(15)	1 440	(4)	86	(9)	51 086	(8)	46 554	(68)
Forward Full Tree	76 701	(14)	3 889	(25)	-	-	-	-	504 473	(79)	12 323	(18)
Manual Slash (bush)	401 708	(75)	9 360	(60)	35 344	(96)	919	(91)	72 208	(11)	7 526	(11)
Manual Slash (road)	10 476	(2)	1 293	(8)	1 440	(4)	86	(9)	11 621	(2)	386	(1)
Mech. Slash (bush)	-	-	-	-	-	-	-	-	20 938	(3)	-	-
Mech. Slash (road)	124 216	(23)	3 760	(24)	-	-	-	-	402 976	(63)	60 550	(88)
Mech. Slash (mill)	-	-	-	-	-	-	-	-	130 830	(21)	-	-
Manual Slash (mill)	-	-	-	-	-	-	-	-	-	-	-	-
Full Tree Chip	-	-	1 222	(8)	-	-	-	-	-	-	-	-
TOTAL	536 400	(100)	15 635	(100)	36 784	(100)	1 005	(100)	638 573	(100)	68 462	(100)

1) Volume figures were obtained from scale reports received to March 31, 1984.
2) Distribution of volumes by harvesting system were estimates based on information obtained in the 1983-84 Operating Plans and/or Annual Reports for Crown Lands.

Table 2. Harvesting Systems - Licenses by volume and percent

FUNCTION	FUNDY				YORK				CARLETON			
	SW m^3	%	HW m^3	%	SW m^3	%	HW m^3	%	SW m^3	%	HW m^3	%
Manual Fell	261 424	(86)	46 117	(89)	170 632	(100)	76 567	(100)	111 636	(100)	49 599	(100)
Mechanical Fell	41 923	(14)	5 981	(11)	-	-	-	-	-	-	-	-
Manual Delimb (bush)	197 358	(65)	43 559	(84)	170 632	(100)	76 567	(100)	111 636	(100)	49 599	(100)
Mech. Delimb (bush)	41 923	(14)	5 981	(11)	-	-	-	-	-	-	-	-
Mech. Delimb (road)	64 066	(21)	1 964	(4)	-	-	-	-	-	-	-	-
Manual Delimb (road)	-	-	-	-	-	-	-	-	-	-	-	-
Forward Short Wood	210 675	(70)	33 093	(63)	8 387	(5)	4 714	(6)	-	-	-	-
Forward Tree Length	28 606	(9)	16 447	(32)	162 245	(95)	71 853	(94)	111 636	(100)	49 599	(100)
Forward Full Tree	64 066	(21)	2 558	(5)	-	-	-	-	-	-	-	-
Manual Slash (bush)	168 752	(56)	27 117	(52)	8 387	(5)	4 714	(6)	-	-	-	-
Manual Slash (road)	11 406	(4)	2 907	(6)	45 737	(27)	33 476	(44)	2 226	(2)	398	(1)
Mech. Slash (bush)	41 923	(14)	5 981	(11)	-	-	-	-	-	-	-	-
Mech. Slash (road)	66 190	(21)	15 499	(30)	116 508	(68)	38 377	(50)	-	-	-	-
Mech. Slash (mill)	15 076	(5)	-	-	-	-	-	-	109 410	(98)	49 201	(99)
Manual Slash (mill)	-	-	-	-	-	-	-	-	-	-	-	-
Full Tree Chip	-	-	594	(1)	-	-	-	-	-	-	-	-
TOTAL	303 347	(100)	52 098	(100)	170 632	(100)	76 567	(100)	111 636	(100)	49 599	(100)

1) Volume figures were obtained from scale reports received to March 31, 1984.
2) Distribution of volumes by harvesting system were estimates based on information obtained in the 1983-84 Operating Plans and/or Annual Reports for Crown Lands.

Table 2. Harvesting Systems - Licenses by volume and percent

FUNCTION	RESTIGOUCHE-TOBIQUE							
	SW m^3	%	HW m^3	%	SW m^3	%	HW m^3	%
Manual Fell	412 073	(93)	59 615	(93)				
Mechanical Fell	32 002	(7)	4 518	(7)				
Manual Delimb (bush)	389 368	(88)	40 432	(63)				
Mech. Delimb (bush)	-	-	-	-				
Mech. Delimb (road)	54 707	(12)	8 164	(13)				
Manual Delimb (road)	-	-	-	-				
Forward Short Wood	-	-	-	-				
Forward Tree Length	389 368	(88)	40 432	(63)				
Forward Full Tree	54 707	(12)	23 701	(37)				
Manual Slash (bush)	-	-	-	-				
Manual Slash (road)	24 042	(5)	23 252	(36)				
Mech. Slash (bush)	-	-	-	-				
Mech. Slash (road)	331 922	(75)	21 874	(34)				
Mech. Slash (mill)	88 111	(20)	3 470	(6)				
Manual Slash (mill)	-	-	-	-				
Full Tree Chip	-	-	15 537	(24)				
TOTAL	444 075	(100)	64 133	(100)				

1) Volume figures were obtained from scale reports received to March 31, 1984.
2) Distribution of volumes by harvesting system were estimates based on information obtained in the 1983-84 Operating Plans and/or Annual Reports for Crown Lands.

Table 3. Harvesting Systems - Upsalquitch License by volume and percent

FUNCTION	LICENSEE				SUB-LICENSEE				LICENSE			
	SW m^3	%	HW m^3	%	SW m^3	%	HW m^3	%	SW m^3	%	HW m^3	%
Manual Fell	179 487	(67)	15 744	(97)	70 071	(100)	5 573	(100)	249 558	(74)	21 317	(98)
Mechanical Fell	89 690	(33)	465	(3)	-	-	-	-	89 690	(26)	465	(2)
Manual Delimb (bush)	179 487	(67)	15 744	(97)	70 071	(100)	5 573	(100)	249 558	(74	21 317	(98)
Mech. Delimb (bush)	89 690	(33)	465	(3)	-	-	-	-	89 690	(26)	465	(2)
Mech. Delimb (road)	-	-	-	-	-	-	-	-	-	-	-	-
Manual Delimb (road)	-	-	-	-	-	-	-	-	-	-	-	-
Forward Short Wood	89 690	(33)	465	(3)	-	-	-	-	89 690	(26)	465	(2)
Forward Tree Length	179 487	(67)	15 744	(97)	70 071	(100)	5 573	(100)	249 558	(74)	21 317	(98)
Forward Full Tree	-	-	-	-	-	-	-	-	-	-	-	-
Manual Slash (bush)	-	-	-	-	-	-	-	-	-	-	-	-
Manual Slash (road)	60 134	(22)	4 762	(29)	7 119	(10)	-	-	67 253	(20)	4 762	(22)
Mech. Slash (bush)	89 690	(33)	465	(3)	-	-	-	-	89 690	(26)	465	(2)
Mech. Slash (road)	119 353	(45)	10 982	(68)	62 952	(90)	5 573	(100)	182 305	(54)	16 555	(76)
Mech. Slash (mill)	-	-	-	-	-	-	-	-	-	-	-	-
Manual Slash (mill)	-	-	-	-	-	-	-	-	-	-	-	-
Full Tree Chip	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL	269 177	(100)	16 209	(100)	70 071	(100)	5 573	(100)	339 248	(100)	21 782	(100)

1) Volume figures were obtained from scale reports received to March 31, 1984.
2) Distribution of volumes by harvesting system were estimates based on information obtained in the 1983-84 Operating Plans and/or Annual Reports for Crown Lands.

Table 4. Harvesting Systems - Nepisiguit License by volume and percent

FUNCTION	LICENSEE				SUB-LICENSEE				LICENSE			
	SW m^3	%	HW m^3	%	SW m^3	%	HW m^3	%	SW m^3	%	HW m^3	%
Manual Fell	130 984	(100)	27 275	(100)	96 044	(100)	17 675	(100)	227 028	(100)	44 950	(100)
Mechanical Fell	-	-	-	-	-	-	-	-	-	-	-	-
Manual Delimb (bush)	130 984	(100)	27 275	(100)	96 044	(100)	17 675	(100)	227 028	(100)	44 950	(100)
Mech. Delimb (bush)	-	-	-	-	-	-	-	-	-	-	-	-
Mech. Delimb (road)	-	-	-	-	-	-	-	-	-	-	-	-
Manual Delimb (road)	-	-	-	-	-	-	-	-	-	-	-	-
Forward Short Wood	36 676	(28)	7 637	(28)	45 141	(47)	9 545	(54)	81 817	(36)	17 182	(38)
Forward Tree Length	94 308	(72)	19 638	(72)	50 903	(53)	8 130	(46)	145 211	(64)	27 768	(62)
Forward Full Tree	-	-	-	-	-	-	-	-	-	-	-	-
Manual Slash (bush)	36 676	(28)	7 637	(28)	51 665	(54)	5 817	(33)	88 341	(39)	13 454	(30)
Manual Slash (road)	-	-	-	-	2 126	(2)	304	(2)	2 126	(1)	304	(1)
Mech. Slash (bush)	-	-	-	-	-	-	-	-	-	-	-	-
Mech. Slash (road)	94 308	(72)	19 638	(72)	42 253	(44)	11 672	(65)	136 561	(60)	31 192	(69)
Mech. Slash (mill)	-	-	-	-	-	-	-	-	-	-	-	-
Manual Slash (mill)	-	-	-	-	-	-	-	-	-	-	-	-
Full Tree Chip	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL	130 984	(100)	27 275	(100)	96 044	(100)	17 675	(100)	227 028	(100)	44 950	(100)

1) Volume figures were obtained from scale reports received to March 31, 1984.

2) Distribution of volumes by harvesting system were estimates based on information obtained in the 1983-84 Operating Plans and/or Annual Reports for Crown Lands.

Table 5. Harvesting Systems - Lower Miramichi License by volume and percent

FUNCTION	LICENSEE				SUB-LICENSEE				LICENSE			
	SW m^3	%	HW m^3	%	SW m^3	%	HW m^3	%	SW m^3	%	HW m^3	%
Manual Fell	266 539	(100)	6 850	(100)	12 117	(100)	117	(100)	278 656	(100)	6 967	(100)
Mechanical Fell	-	-	-	-	-	-	-	-	-	-	-	-
Manual Delimb (bush)	198 837	(75)	6 317	(92)	12 117	(100)	117	(100)	210 954	(76)	6 434	(92)
Mech. Delimb (bush)	-	-	-	-	-	-	-	-	-	-	-	-
Mech. Delimb (road)	67 702	(25)	533	(8)	-	-	-	-	67 702	(24)	533	(8)
Manual Delimb (road)	-	-	-	-	-	-	-	-	-	-	-	-
Forward Short Wood	98 031	(37)	1 096	(16)	-	-	-	-	98 031	(36)	1 096	(15)
Forward Tree Length	100 806	(38)	5 221	(76)	12 117	(100)	117	(100)	112 923	(40)	5 338	(77)
Forward Full Tree	67 702	(25)	533	(8)	-	-	-	-	67 702	(24)	533	(8)
Manual Slash (bush)	98 031	(37)	1 096	(16)	-	-	-	-	98 031	(36)	1 096	(15)
Manual Slash (road)	36 199	(13)	4 541	(66)	12 117	(100)	117	(100)	48 316	(17)	4 658	(67)
Mech. Slash (bush)	-	-	-	-	-	-	-	-	-	-	-	-
Mech. Slash (road)	132 309	(50)	1 213	(18)	-	-	-	-	132 309	(47)	1 213	(18)
Mech. Slash (mill)	-	-	-	-	-	-	-	-	-	-	-	-
Manual Slash (mill)	-	-	-	-	-	-	-	-	-	-	-	-
Full Tree Chip	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL	266 539	(100)	6 850	(100)	12 117	(100)	117	(100)	278 656	(100)	6 967	(100)

1) Volume figures were obtained from scale reports received to March 31, 1984.
2) Distribution of volumes by harvesting system were estimates based on information obtained in the 1983-84 Operating Plans and/or Annual Reports for Crown Lands.

Table 6. Harvesting Systems - Upper Miramichi License by volume and percent

FUNCTION	LICENSEE				SUB-LICENSEE				LICENSE			
	SW m^3	%	HW m^3	%	SW m^3	%	HW m^3	%	SW m^3	%	HW m^3	%
Manual Fell	364 110	(83)	9 324	(78)	95 589	(100)	3 644	(100)	459 699	(86)	12 968	(83)
Mechanical Fell	76 701	(17)	2 667	(22)	-	-	-	-	76 701	(14)	2 667	(17)
Manual Delimb (bush)	364 110	(83)	8 102	(68)	95 589	(100)	3 644	(100)	459 699	(86)	11 746	(75)
Mech. Delimb (bush)	-	-	-	-	-	-	-	-	-	-	-	-
Mech. Delimb (road)	76 701	(17)	2 667	(22)	-	-	-	-	76 701	(14)	2 667	(17)
Manual Delimb (road)	-	-	-	-	-	-	-	-	-	-	-	-
Forward Short Wood	316 414	(72)	5 716	(53)	85 896	(90)	3 644	(100)	402 310	(75)	9 360	(60)
Forward Tree Length	47 696	(11)	2 386	(22)	9 693	(10)	-	-	57 389	(11)	2 386	(15)
Forward Full Tree	76 701	(17)	2 667	(25)	-	-	-	-	76 701	(14)	3 889	(25)
Manual Slash (bush)	316 414	(72)	5 716	(48)	85 294	(89)	3 644	(100)	401 708	(75)	9 360	(60)
Manual Slash (road)	9 874	(2)	1 293	(11)	602	(1)	-	-	10 476	(2)	1 293	(8)
Mech. Slash (bush)	-	-	-	-	-	-	-	-	-	-	-	-
Mech. Slash (road)	114 523	(26)	3 760	(31)	9 693	(10)	-	-	124 216	(23)	3 760	(24)
Mech. Slash (mill)	-	-	-	-	-	-	-	-	-	-	-	-
Manual Slash (mill)	-	-	-	-	-	-	-	-	-	-	-	-
Full Tree Chip(bush)	-	-	1 222	(10)	-	-	-	-	-	-	1 222	(8)
TOTAL	440 811	(100)	11 991	(100)	95 589	(100)	3 644	(100)	536 400	(100)	15 635	(100)

1) Volume figures were obtained from scale reports received to March 31, 1984.
2) Distribution of volumes by harvesting system were estimates based on information obtained in the 1983-84 Operating Plans and/or Annual Reports for Crown Lands.

Table 7. Harvesting Systems - Kent License by volume and percent

FUNCTION	LICENSE				SUB-LICENSEE				LICENSE			
	SW m^3	%	HW m^3	%	SW m^3	%	HW m^3	%	SW m^3	%	HW m^3	%
Manual Fell	34 086	(100)	937	(100)	2 698	(100)	68	(100)	36 784	(100)	1 005	(100)
Mechanical Fell	-	-	-	-	-	-	-	-	-	-	-	-
Manual Delimb (bush)	34 086	(100)	937	(100)	2 698	(100)	68	(100)	36 784	(100)	1 005	(100)
Mech. Delimb (bush)	-	-	-	-	-	-	-	-	-	-	-	-
Mech. Delimb (road)	-	-	-	-	-	-	-	-	-	-	-	-
Manual Delimb (road)	-	-	-	-	-	-	-	-	-	-	-	-
Forward Short Wood	32 646	(96)	851	(91)	2 698	(100)	68	(100)	35 344	(96)	919	(91)
Forward Tree Length	1 440	(4)	86	(9)	-	-	-	-	1 440	(4)	86	(9)
Forward Full Tree	-	-	-	-	-	-	-	-	-	-	-	-
Manual Slash (bush)	32 646	(96)	851	(91)	2 698	(100)	68	(100)	35 344	(96)	919	(91)
Manual Slash (road)	1 440	(4)	86	(9)	-	-	-	-	1 440	(4)	86	(9)
Mech. Slash (bush)	-	-	-	-	-	-	-	-	-	-	-	-
Mech. Slash (road)	-	-	-	-	-	-	-	-	-	-	-	-
Mech. Slash (mill)	-	-	-	-	-	-	-	-	-	-	-	-
Manual Slash (mill)	-	-	-	-	-	-	-	-	-	-	-	-
Full Tree Chip	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL	34 086	(100)	937	(100)	2 698	(100)	68	(100)	36 784	(100)	1 005	(100)

1) Volume figures were obtained from scale reports received to March 31, 1984.
2) Distribution of volumes by harvesting system were estimates based on information obtained in the 1983-84 Operating Plans and/or Annual Reports for Crown Lands.

Table 8. Harvesting Systems - Queens-Charlotte License by volume and percent

FUNCTION	LICENSEE				SUB-LICENSEE				LICENSE			
	SW m^3	%	HW m^3	%	SW m^3	%	HW m^3	%	SW m^3	%	HW m^3	%
Manual Fell	564 085	(96)	62 550	(95)	48 945	(100)	2 489	(100)	613 030	(96)	65 039	(95)
Mechanical Fell	25 543	(4)	3 423	(5)	-	-	-	-	25 543	(4)	3 423	(5)
Manual Delimb (bush)	65 998	(11)	50 911	(77)	48 945	(100)	2 489	(100)	114 943	(18)	53 400	(78)
Mech. Delimb (bush)	19 157	(4)	2 739	(4)	-	-	-	-	19 157	(3)	2 739	(4)
Mech. Delimb (road)	504 473	(85)	12 323	(19)	-	-	-	-	504 473	(79)	12 323	(18)
Manual Delimb (road)	-	-	-	-	-	-	-	-	-	-	-	-
Forward Short Wood	56 584	(10)	8 415	(13)	26 430	(54)	1 170	(47)	83 014	(13)	9 585	(14)
Forward Tree Length	28 571	(5)	45 235	(69)	22 515	(46)	1 319	(53)	51 086	(8)	46 554	(68)
Forward Full Tree	504 473	(85)	12 323	(18)	-	-	-	-	504 473	(79)	12 323	(18)
Manual Slash (bush)	34 273	(6)	6 288	(10)	37 935	(78)	1 238	(50)	72 208	(11)	7 526	(11)
Manual Slash (road)	611	(--)	-	-	11 010	(22)	386	(16)	11 621	(2)	386	(1)
Mech. Slash (bush)	20 938	(4)	-	-	-	-	-	-	20 938	(3)	-	-
Mech. Slash (road)	402 976	(68)	59 685	(90)	-	-	865	(34)	402 976	(63)	60 550	(88)
Mech. Slash (mill)	130 830	(22)	-	-	-	-	-	-	130 830	(21)	-	-
Manual Slash (mill)	-	-	-	-	-	-	-	-	-	-	-	-
Full Tree Chip	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL	589 628	(100)	65 973	(100)	48 945	(100)	2 489	(100)	638 573	(100)	68 462	(100)

1) Volume figures were obtained from scale reports received to March 31, 1984.
2) Distribution of volumes by harvesting system were estimates based on information obtained in the 1983-84 Operating Plans and/or Annual Reports for Crown Lands.

Table 9. Harvesting Systems - Fundy License by volume and percent

FUNCTION	LICENSEE				SUB-LICENSEE				LICENSE			
	SW m^3	%	HW m^3	%	SW m^3	%	HW m^3	%	SW m^3	%	HW m^3	%
Manual Fell					261 424	(86)	46 117	(89)	261 424	(86)	46 117	(89)
Mechanical Fell					41 923	(14)	5 981	(11)	41 923	(14)	5 981	(11)
Manual Delimb (bush)					197 358	(65)	43 559	(84)	197 358	(65)	43 559	(84)
Mech. Delimb (bush)	LICENSEE DID NOT HARVEST				41 923	(14)	5 981	(11)	41 923	(14)	5 981	(11)
Mech. Delimb (road)	ON CROWN LAND DURING				64 066	(21)	1 964	(4)	64 066	(21)	1 964	(4)
Manual Delimb (road)	1983-84 SEASON				-	-	-	-	-	-	-	-
Forward Short Wood					210 675	(70)	33 093	(63)	210 675	(70)	33 093	(63)
Forward Tree Length					28 606	(9)	16 447	(32)	28 606	(9)	16 447	(32)
Forward Full Tree					64 066	(21)	2 558	(5)	64 066	(21)	2 558	(5)
Manual Slash (bush)					168 752	(56)	27 117	(52)	168 752	(56)	27 117	(52)
Manual Slash (road)					11 406	(4)	2 907	(6)	11 406	(4)	2 907	(6)
Mech. Slash (bush)					41 923	(14)	5 981	(11)	41 923	(14)	5 981	(11)
Mech. Slash (road)					66 190	(21)	15 499	(30)	66 190	(21)	15 499	(30)
Mech. Slash (mill)					15 076	(5)	-	-	15 076	(5)	-	-
Manual Slash (mill)					-	-	-	-	-	-	-	-
Full Tree Chip					-	-	594	(1)	-	-	594	(1)
TOTAL					303 347	(100)	52 098	(100)	303 347	(100)	52 098	(100)

1) Volume figures were obtained from scale reports received to March 31, 1984.
2) Distribution of volumes by harvesting system were estimates based on information obtained in the 1983-84 Operating Plans and/or Annual Reports for Crown Lands.

Table 10. Harvesting Systems - York License by volume and percent

FUNCTION	LICENSEE				SUB-LICENSEE				LICENSE			
	SW m^3	%	HW m^3	%	SW m^3	%	HW m^3	%	SW m^3	%	HW m^3	%
Manual Fell	170 632	(100)	76 567	(100)					170 632	(100)	76 567	(100)
Mechanical Fell	-	-	-	-					-	-	-	-
Manual Delimb (bush)	170 632	(100)	76 567	(100)	NO HARVESTING BY				170 632	(100)	76 567	(100)
Mech. Delimb (bush)	-	-	-	-	SUB-LICENSEES DURING				-	-	-	-
Mech. Delimb (road)	-	-	-	-	1983-84 OPERATING				-	-	-	-
Manual Delimb (road)	-	-	-	-	YEAR				-	-	-	-
Forward Short Wood	8 387	(5)	4 714	(6)					8 387	(5)	4 714	(6)
Forward Tree Length	162 245	(95)	71 853	(94)					162 245	(95)	71 853	(94)
Forward Full Tree	-	-	-	-					-	-	-	-
Manual Slash (bush)	8 387	(5)	4 714	(6)					8 387	(5)	4 714	(6)
Manual Slash (road)	45 737	(27)	33 476	(44)					45 737	(27)	33 476	(44)
Mech. Slash (bush)	-	-	-	-					-	-	-	-
Mech. Slash (road)	116 508	(68)	38 377	(50)					116 508	(68)	38 377	(50)
Mech. Slash (mill)	-	-	-	-					-	-	-	-
Manual Slash (mill)	-	-	-	-					-	-	-	-
Full Tree Chip	-	-	-	-					-	-	-	-
TOTAL	170 632	(100)	76 567	(100)					170 632	(100)	76 567	(100)

1) Volume figures were obtained from scale reports received to March 31, 1984.
2) Distribution of volumes by harvesting system were estimates based on information obtained in the 1983-84 Operating Plans and/or Annual Reports for Crown Lands.

Table 11. Harvesting Systems - Carleton License by volume and percent

FUNCTION	LICENSEE				SUB-LICENSEE				LICENSE			
	SW m^3	%	HW m^3	%	SW m^3	%	HW m^3	%	SW m^3	%	HW m^3	%
Manual Fell	69 389	(100)	21 829	(100)	42 247	(100)	27 770	(100)	111 636	(100)	49 599	(100)
Mechanical Fell	-	-	-	-	-	-	-	-	-	-	-	-
Manual Delimb (bush)	69 389	(100)	21 829	(100)	42 247	(100)	27 770	(100)	111 636	(100)	49 599	(100)
Mech. Delimb (bush)	-	-	-	-	-	-	-	-	-	-	-	-
Mech. Delimb (road)	-	-	-	-	-	-	-	-	-	-	-	-
Manual Delimb (road)	-	-	-	-	-	-	-	-	-	-	-	-
Forward Short Wood	-	-	-	-	-	-	-	-	-	-	-	-
Forward Tree Length	69 389	(100)	21 829	(100)	42 247	(100)	27 770	(100)	111 636	(100)	49 599	(100)
Forward Full Tree	-	-	-	-	-	-	-	-	-	-	-	-
Manual Slash (bush)	-	-	-	-	-	-	-	-	-	-	-	-
Manual Slash (road)	-	-	40	(0)	2 226	(5)	358	(1)	2 226	(2)	398	(1)
Mech. Slash (bush)	-	-	-	-	-	-	-	-	-	-	-	-
Mech. Slash (road)	-	-	-	-	-	-	-	-	-	-	-	-
Mech. Slash (mill)	69 389	(100)	21 789	(100)	40 021	(95)	27 412	(99)	109 410	(98)	49 201	(99)
Manual Slash (mill)	-	-	-	-	-	-	-	-	-	-	-	-
Full Tree Chip	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL	69 389	(100)	21 829	(100)	42 247	(100)	27 770	(100)	111 636	(100)	49 599	(100)

1) Volume figures were obtained from scale reports received to March 31, 1984.
2) Distribution of volumes by harvesting system were estimates based on information obtained in the 1983-84 Operating Plans and/or Annual Reports for Crown Lands.

Table 12. Harvesting Systems - Restigouche-Tobique License by volume and percent

FUNCTION	LICENSEE				SUB-LICENSEE				LICENSE			
	SW m^3	%	HW m^3	%	SW m^3	%	HW m^3	%	SW m^3	%	HW m^3	%
Manual Fell	289 806	(90)	29 177	(87)	122 267	(100)	30 438	(100)	412 073	(93)	59 615	(93)
Mechanical Fell	32 002	(10)	4 518	(13)	-	-	-	-	32 002	(7)	4 518	(7)
Manual Delimb (bush)	267 101	(83)	9 994	(30)	122 267	(100)	30 438	(100)	389 368	(88)	40 432	(63)
Mech. Delimb (bush)	-	-	-	-	-	-	-	-	-	-	-	-
Mech. Delimb (road)	54 707	(17)	8 164	(24)	-	-	-	-	54 707	(12)	8 164	(13)
Manual Delimb (road)	-	-	-	-	-	-	-	-	-	-	-	-
Forward Short Wood	-	-	-	-	-	-	-	-	-	-	-	-
Forward Tree Length	267 101	(83)	9 994	(30)	122 267	(100)	30 438	(100)	389 368	(88)	40 432	(63)
Forward Full Tree	54 707	(17)	23 701	(70)	-	-	-	-	54 707	(12)	23 701	(37)
Manual Slash (bush)	-	-	-	-	-	-	-	-	-	-	-	-
Manual Slash (road)	6 436	(2)	-	-	17 606	(14)	23 252	(76)	24 042	(5)	23 252	(36)
Mech. Slash (bush)	-	-	-	-	-	-	-	-	-	-	-	-
Mech. Slash (road)	229 095	(71)	14 688	(44)	102 827	(84)	7 186	(24)	331 922	(75)	21 874	(34)
Mech. Slash (mill)	86 277	(27)	3 470	(10)	1 834	(2)	-	-	88 111	(20)	3 470	(6)
Manual Slash (mill)	-	-	-	-	-	-	-	-	-	-	-	-
Full Tree Chip	-	-	15 537	(46)	-	-	-	-	-	-	15 537	(24)
TOTAL	321 808	(100)	33 695	(100)	122 267	(100)	30 438	(100)	444 075	(100)	64 133	(100)

1) Volume figures were obtained from scale reports received to March 31, 1984.
2) Distribution of volumes by harvesting system were estimates based on information obtained in the 1983-84 Operating Plans and/or Annual Reports for Crown Lands.

HARVESTING FUNCTION COMPARISON

A comparison of harvesting functions on a provincial basis for the 1983-84 operating season can be made with the 1981-82 and 1982-83 operating seasons by observing:

Figure 1. Comparison of felling methods.

Figure 2. Comparison of delimbing methods.

Figure 3. Comparison of forwarding methods.

Figure 4. Comparison of slashing methods.

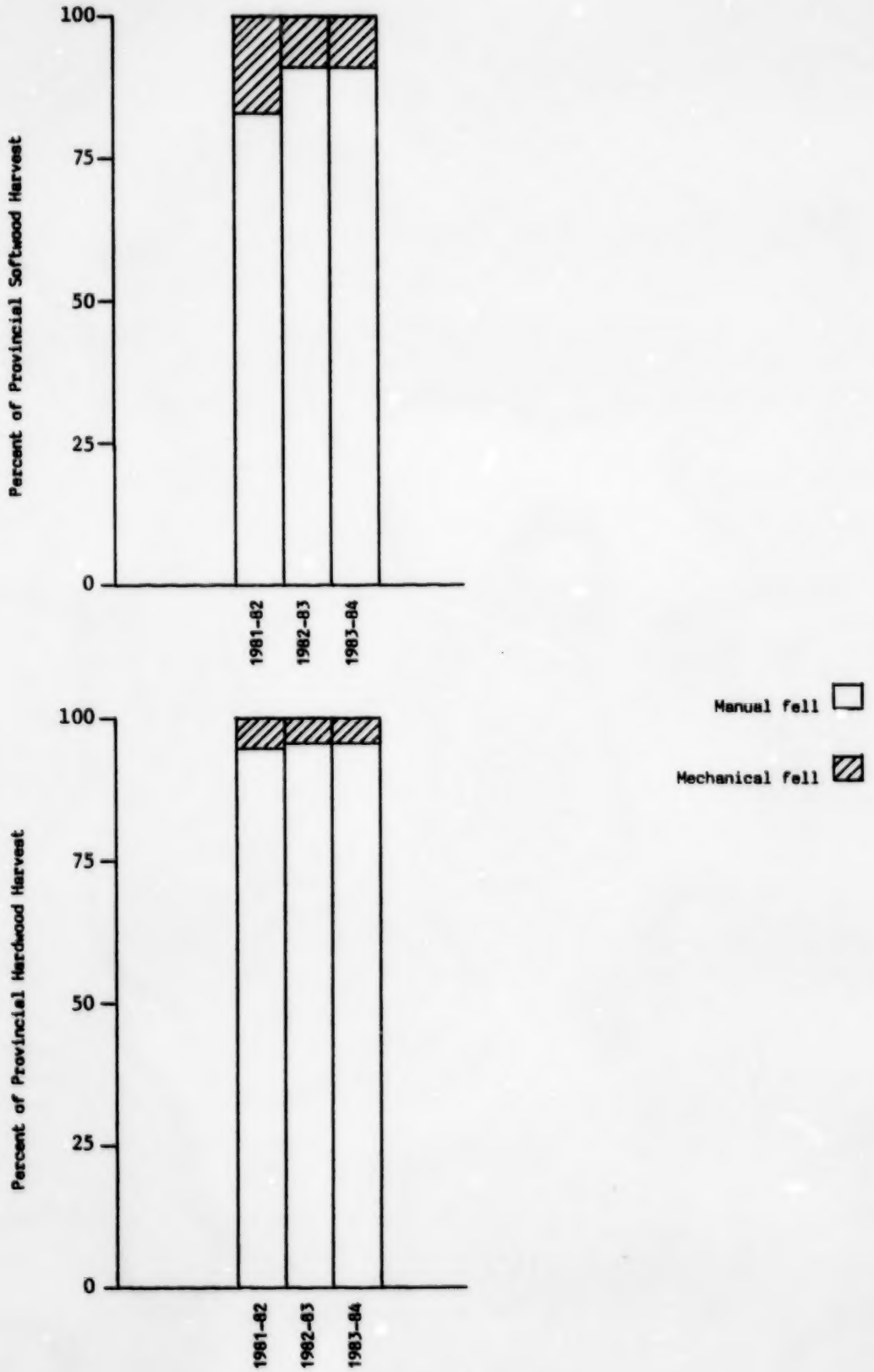

Figure 1. Comparison of felling methods.

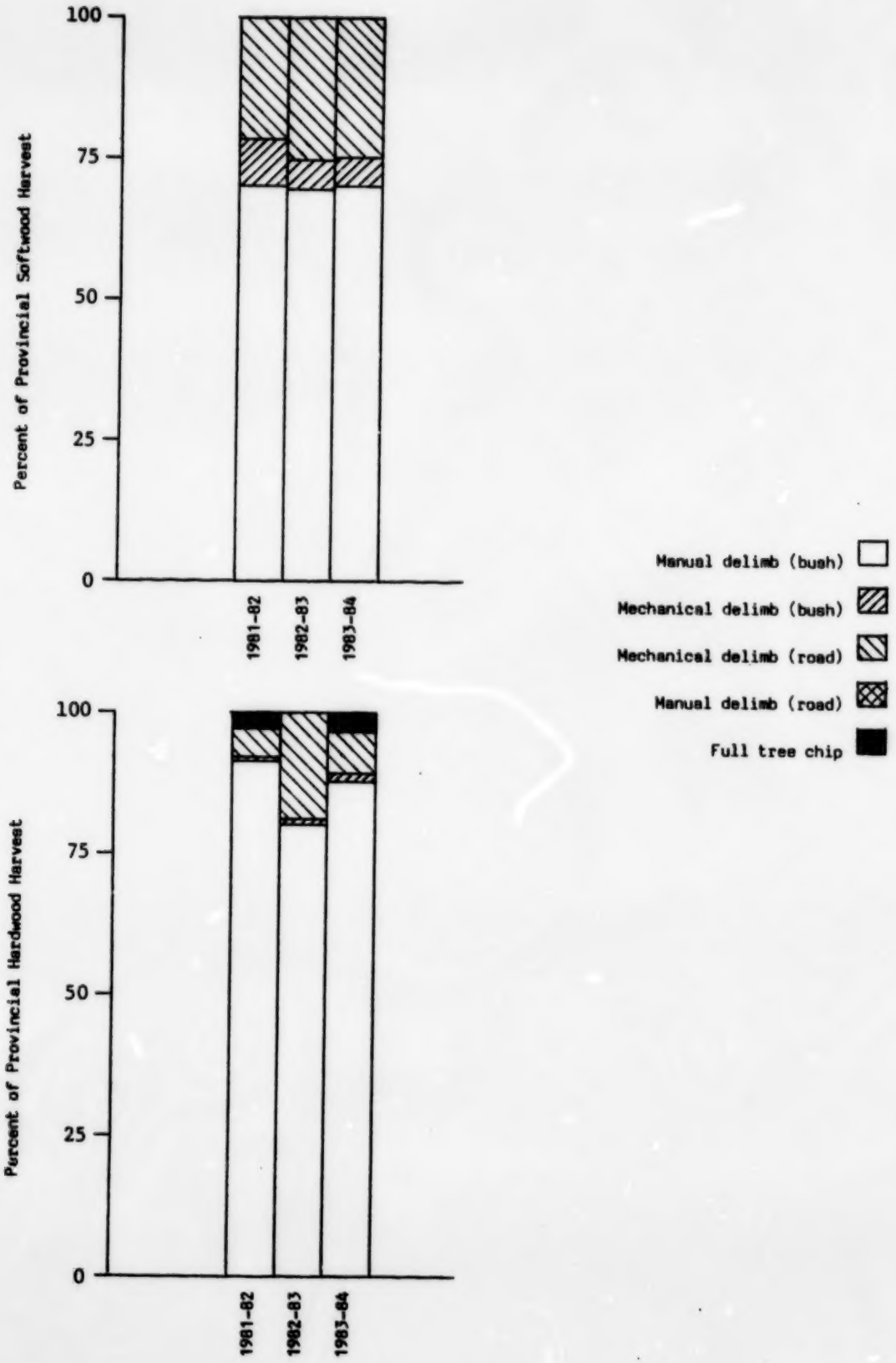

Figure 2. Comparison of delimbing methods.

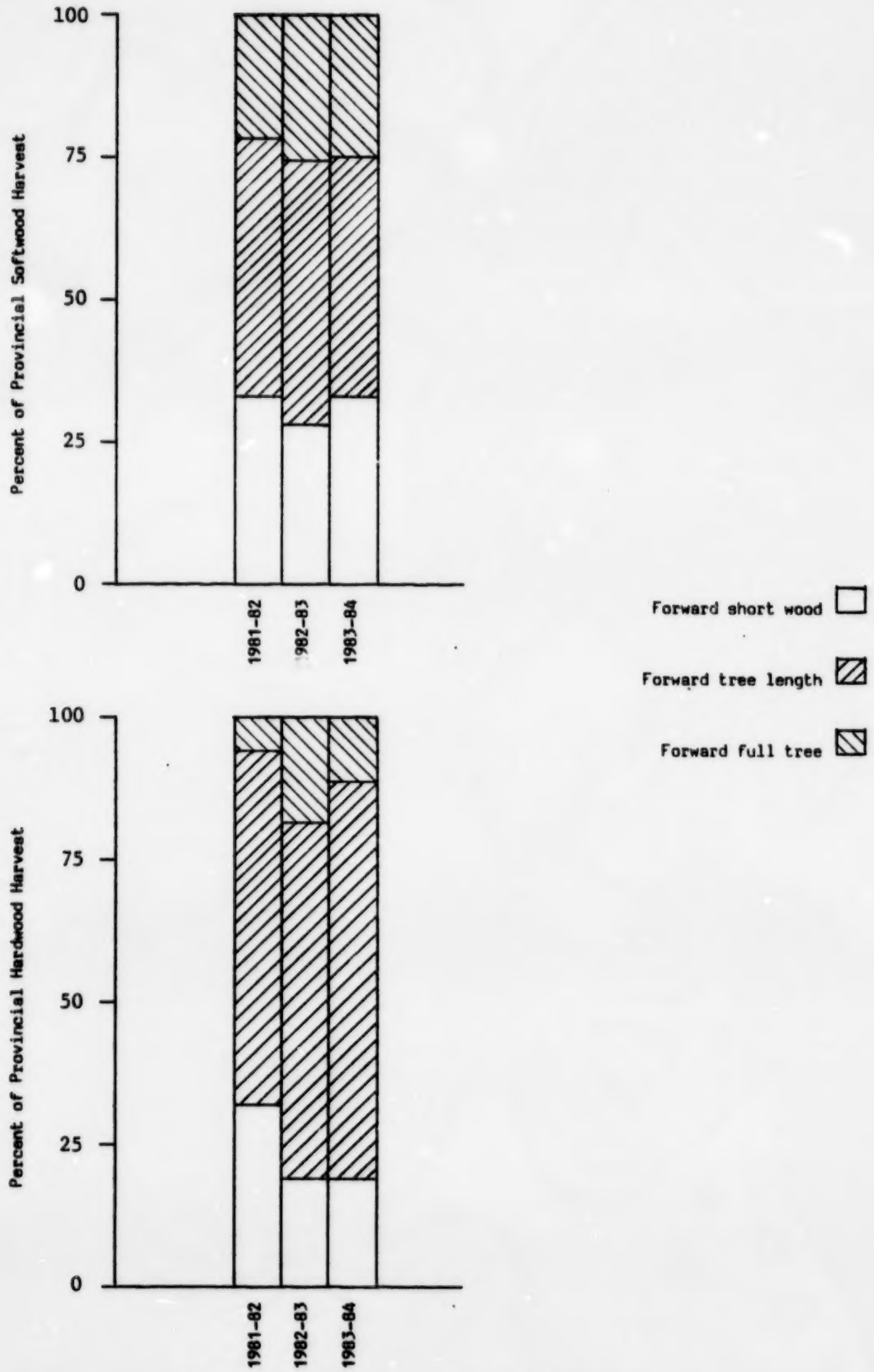

Figure 3. Comparison of forwarding methods.

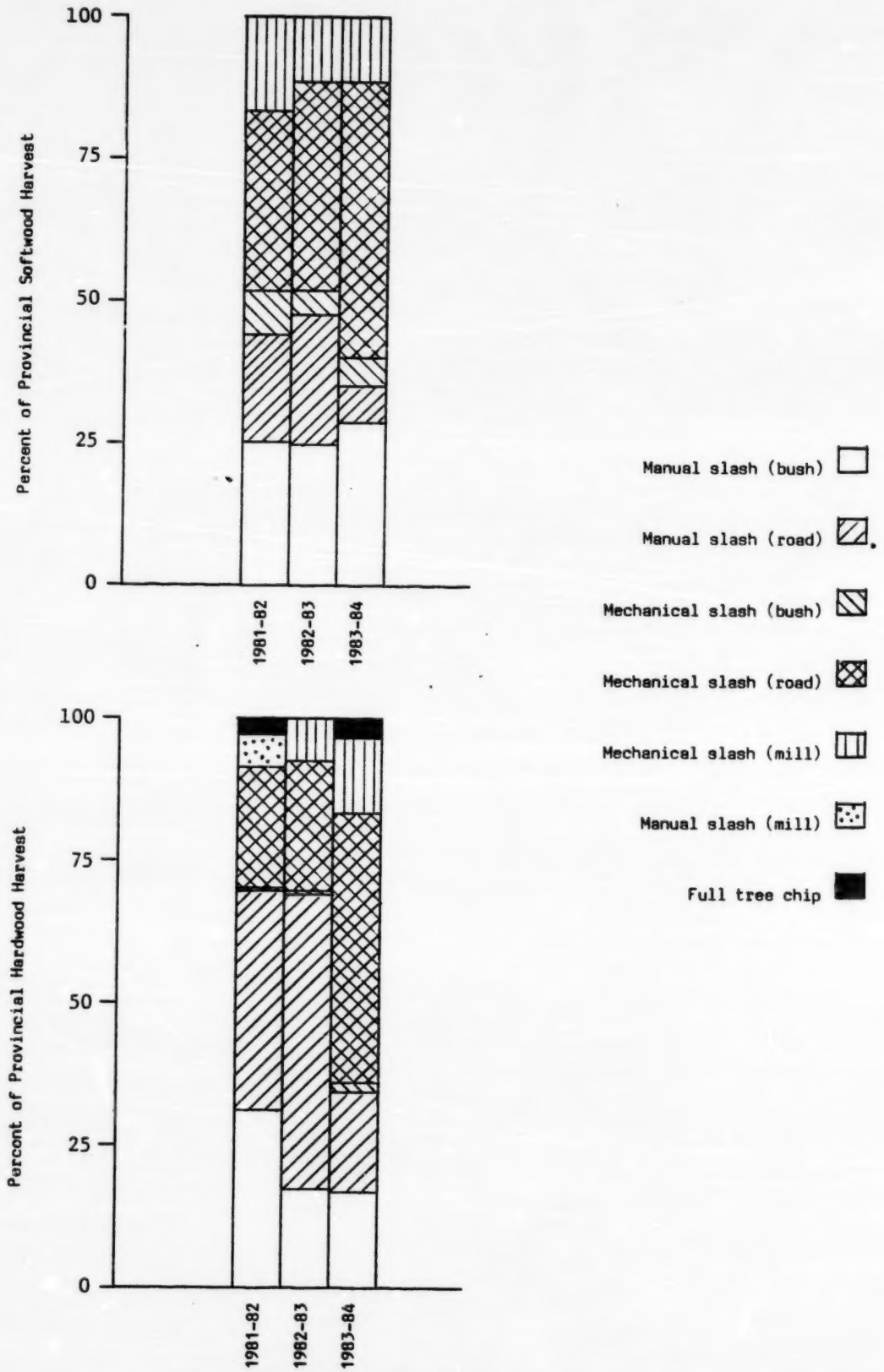

Figure 4. Comparison of slashing methods.

COMMENTS

The volumes quoted in this survey are based on scale reports received by March 31, 1984; however, this was not the case in previous harvesting system surveys on Crown Lands. Hence comparison of the absolute volume harvested by a system during the 1983-84 season with the volumes from other seasons cannot support strong conclusions. However, the percentages quoted from one year to the next are based on information supplied by Licensees in Operating Plans and/or Annual Reports. The percentages are reliable enough to facilitate comparison of the relative volumes of wood harvested by system from season to season.

Some changes have occurred in harvesting practices since the 1982-83 operating season. The felling function has not changed at all, with the bulk of the harvest being felled manually during the last two years. Delimbing of softwood trees has changed very little, but a greater proportion of hardwoods were delimbed manually in the bush instead of mechanically at roadside. This probably indicates dissatisfaction with the ability of delimbers to effectively delimb branchy hardwoods, and an effort to use tree length systems to harvest blocks with an appreciable hardwood content. There was an increase in the amount of softwood forwarded in shortwood form with a corresponding decrease in tree length operations, but not enough to indicate a trend. The increase in manual delimbing of hardwoods is reflected in a corresponding increase in forwarding by the tree length method and a decrease in full tree forwarding. The trend towards mechanical slashing of softwoods and hardwoods at roadside appears to be increasing, particularly through the use of one-operator slashers.

The trends within individual Licenses were as follows:

Upsalquitch License - a larger proportion of tree length wood was slashed mechanically at roadside.

Nepisiguit License - an increase in the use of the trail cut method, as well as an increase of mechanical slashing of tree length wood at roadside instead of manual slashing.

Lower Miramichi License - the trail cut method was used less, while the conventional tree length and conventional full tree were used more for the softwood harvest. Hardwoods were cut to a greater extent by the conventional tree length method.

Upper Miramichi License - the proportion of softwood felled mechanically dropped slightly and the trail cut system was utilized more often. This resulted in less mechanical processing at roadside. The hardwood harvest was most noticeably affected by the full tree chipping trials for fuel production that were carried out on old cutovers.

Kent License - a very small change from a total trail cut harvest (1982-83) to trail cutting and a minor amount of conventional tree length logging.

Queens-Charlotte License - there was a small decrease in softwood volume harvested by the tree length method and an increase in trail cutting and conventional full tree logging. This was accompanied by an increase in mechanical processing at roadside. A much larger percentage of hardwood was harvested tree length instead of full tree.

Fundy License - the conventional full tree method was used extensively compared to 1982 to harvest softwood; trail cutting and conventional tree length operations were used less often. Conventional tree length operations were used more often instead of trail cuts to harvest hardwoods. Mechanical slashing at roadside was not attempted in 1982 but accounted for one-third of hardwood slashing in 1983.

York License - the conventional full tree method was not used at all on 1983 and was replaced by some trail cutting and an increase in conventional tree length harvesting. Mechanical slashing at roadside replaced a large amount of manual slashing at roadside.

Carleton License - the softwood and hardwood harvest were done by the conventional tree length method, eliminating full tree operations from the previous year. Almost all of the wood was slashed mechanically at the mill.

Retigouche-Tobique License - mechanical full tree operations were used on Crown Lands in 1983, replacing some conventional tree length logging. This resulted in an increase in mechanical processing at roadside, for both hardwood and softwood. One quarter of the hardwood harvest was chipped full tree at roadside for fuel.

GLOSSARY

DELIMB	-	phase of harvesting during which the limbs, branches and top of a tree are removed
FELL	-	phase of harvesting during which a tree is severed from its stump
FELLER BUNCHER	-	machine used to fell trees and place them in a position near the stump, ready for forwarding to roadside
FELLER FORWARDER	-	machine used to fell trees and forward them to roadside for processing
FELLER SLASHER	-	machine used to fell, delimb and slash a tree at the stump, and then pile the wood at the stump for forwarding to roadside
FORWARD	-	phase of harvesting during which trees are moved from stump to roadside
FULL TREE	-	refers to a harvesting system in which the tree is forwarded, complete with crown, for processing at roadside
FULL TREE CHIP	-	refers to a harvesting system in which full trees are chipped at roadside
LICENSEE	-	refers to the holder of a Crown timber license
REGION	-	administrative region of the Department of Natural Resources
SLASH	-	phase of harvesting during which the delimbed stem of a tree is cut into primary forest products
SHORT WOOD	-	refers to a harvesting system in which the tree is forwarded in product form to roadside
SUB-LICENSEE	-	refers to the holder of a Crown timber sub-license
TRAIL CUT	-	a manual short wood harvesting operation where wood is brought to roadside by a forwarder
TREE LENGTH	-	refers to a harvesting system in which the tree stem without crown is forwarded for processing at roadside